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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 09/513,010
Filing Date: February 25, 2000
Appellant(s): HUANG ET AL.

MAILED

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Technology Center 2100

John M Dahl
Reg. No. 44,639
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 17, 2007 appealing from the Office action

mailed November 27, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,153,874	Kohno	10-1992
6,192,414	Horn	2-2001
6,434,117	Momona	8-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10 and 31 are rejected under 35 U.S.C. § **103(a)** as being unpatentable over US Patent No. 5,153,874 of Kohno in view of US Patent No. 6,192,414 of Horn and U.S. Patent No. 6,434,117 of Momona.

In regards to claim 1, Kohno discloses a method for managing the state of a computer network with at least three linked network nodes, where each of the at least three network nodes has redundant network connections, comprising:

determining the state of a primary network connection between each pair of the at least three network nodes (see figure 3 and 4; see column lines 35-52);

determining the state of a redundant network connection between each pair of the at least three network nodes (see figure 3 and 4; column 3 lines 35-52);

selecting either the primary network connection or the redundant network connection, but not both, for receiving data between each pair of network nodes, such that the network path selected to be used to communicate is selected independently based on the determined network states for each pair of network nodes (see column 3 lines 5-7 and 20-30).

However, Kohno discloses a communication network which send signals via both

transmission lines (see column 3 lines 20-30) and thus fails to disclose selecting either the

primary network connection or the redundant network connection, but not both, for sending data

between each pair of network nodes.

Kohno further fails to explicitly disclose wherein at least one of the at least three network

nodes is operable to selectively forward data, where the data is forwarded to a different one of

the at least three network nodes.

Horn discloses a known communication network system which monitors the network

connections and determines the availability of each connection, and then selectively transmits

information via a selected one of the connections (see column 3 lines 55-60), thus indicating

determining the state of a primary network connection between each pair of network nodes,

determining the state of a redundant network connection between each pair of network nodes,

and selecting either the primary network connection or the redundant network connection, but

not both, for sending and receiving data between each pair of network nodes.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teachings of Kohno and Horn to have a system that monitors the

network connections and determines the availability of each connection, and then selectively

transmits information via a selected one of the connections, thus indicating selecting either the

primary network connection or the redundant network connection, but not both, for sending and

receiving data between each pair of network nodes. A person of ordinary skill in the art could

have been motivated to make the modification because Kohno is concerned with reliable

communication of data between a pair of nodes (see figure 1 and column 2 lines 37-41) and

transmitting data via a selected one of the network connections, as per teachings of Horn, constitute a well known means of transmission that effectively and efficiently provide reliable redundant/backup network connection (see column 3 lines 25-27).

Momona further discloses using one or more intermediate nodes as a repeater (see figure 1 and column 4 lines 5-11), indicating wherein at least one of the at least three network nodes is operable to selectively forward data, where the data is forwarded to a different one of the at least three network nodes.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kohno and Horn with Momona to use one or more intermediate nodes as a repeater, indicating wherein at least one of the at least three network nodes is operable to selectively forward data, where the data is forwarded to a different one of the at least three network nodes. A person of ordinary skill in the art could have been motivated to make the modification because Kohno in view of Horn discloses the use of repeaters (see column 3 lines 35-42 of Kohno) and having intermediate nodes that act as repeaters, as per teachings of Momona (see column 4 lines 5-11), would lessen distortion and minimize or remove the need to have repeaters per transmission line between each node.

In regards to claim 2, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses building a network status table that indicated results of determining the state of the primary and redundant network connections between each pair of network nodes (see figure 4).

In regards to claim 3, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses wherein the network status table comprises data

representing network status based on data received at a node from other network nodes (see figure 4 and column 3 lines 40-47).

In regards to claim 4, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses wherein the data received at a node from other networked nodes comprises a diagnostic message (column 3 lines 3-12).

In regards to claim 5, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses wherein the data received at a node from other network nodes comprises data representing the ability of the other nodes to receive data from other different network nodes (see figure 4 and column 3 lines 43-47).

In regards to claims 6 and 7, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses wherein the network status table comprises data representing network status based on a node's ability to send data to other nodes (see figure 4 and column 3 lines 43-47).

In regards to claim 8, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses wherein selecting the primary or redundant network connection for communication between each pair of network nodes comprises selecting the primary network connection if the state of the primary network connection is determined to be operable and selecting the redundant connection if the state of the primary network connection is determined to be inoperable. Kohno states the use of a switch means such that the receiving circuit is connected to a normal transmission line when abnormality is decided (see column 3 lines 25-30), indicating a switch from the primary network connection to a secondary network connection when the primary connection is inoperable or abnormal.

In regards to claim 9, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses wherein selecting the primary or redundant network connection for communication between each pair of network nodes comprises selecting the primary network connection to transmit data if the state of the primary network connection is determined to be operable to transmit data, selecting the primary network connection to receive data if the state of the primary network connection is determined to be operable to receive data, selecting the redundant network connection to transmit data if the state of the primary network connection is determined to be inoperable to transmit data, and selecting the redundant network connection to receive data if the state of the primary network connection is determined to be inoperable to receive data. Kohno states the use of a switch means such that the receiving circuit is connected to a normal transmission line when abnormality is decided (see column 3 lines 25-30), indicating a switch from the primary network connection to a secondary network connection when the primary connection is not operable or abnormal. Thus, it is implied that there is a primary network connection to transmit and receive data upon determination that the network connection is operable and a redundant network connection to transmit and receive data upon determination the network connection is inoperable.

In regards to claim 10, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Momona further discloses wherein selecting a connection for sending and receiving data between each pair of network nodes comprises selecting a connection for sending and receiving data from a first node to one or more connected intermediate nodes and selecting a connection for sending and receiving data from an intermediate node to a second

node. Momona discloses the use of one or more intermediate nodes as a repeater (see figure 1 and column 4 lines 5-11).

In regards to claim 31, Kohno in view of Horn and Momona discloses the claim limitations as discussed above. Kohno further discloses wherein determining the state of connections between each pair of network nodes comprises determination of whether each node in a pair of network nodes can send data to the other node and can receive data from the other node in the pair. Kohno states the use of an abnormal test circuit to check if the transmission line is normal or operable, thus determining whether each node in a pair can send and receive data to the other (see column 2 lines 58-69 and column 3 lines 1-4). Upon determination that the transmission line between a pair is abnormal or inoperable, it is understood that data cannot be sent and received between each node in the pair.

Claims 32-52 are rejected under 35 U.S.C. § **103(a)** as being unpatentable over Kohno in view of Momona.

In regard to claims 32 and 43, Kohno discloses a computer network interface and machine readable medium with instructions thereon, operable to:

determining the state of a primary network connection between the network interface and the network interfaces of at least two other network nodes (see figure 3 and 4; see column lines 35-52);

determining the state of a redundant network connection between the network interface and the network interfaces of at least two other network nodes (see figure 3 and 4; column 3 lines 35-52);

selecting either the primary network connection or the redundant network connection, but not both, for communication with each pair of at least two other network nodes, such that the network connection selected is selected independently based on the determined network states for each other network nodes (see column 3 lines 5-7 and 20-30).

However, Kohno fails to explicitly disclose wherein at least one of the at least three network nodes is operable to selectively forward data, where the data is forwarded to a different one of the at least three network nodes.

Momona discloses using one or more intermediate nodes as a repeater (see figure 1 and column 4 lines 5-11), indicating wherein at least one of the at least three network nodes is operable to selectively forward data, where the data is forwarded to a different one of the at least three network nodes.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kohno with Momona to use one or more intermediate nodes as a repeater, indicating wherein at least one of the at least three network nodes is operable to selectively forward data, where the data is forwarded to a different one of the at least three network nodes. A person of ordinary skill in the art could have been motivated to make the modification because Kohno discloses the use of repeaters (see column 3 lines 35-42) and having intermediate nodes that act as repeaters, as per teachings of Momona (see column 4 lines 5-11), would lessen distortion and minimize or remove the need to have repeaters per transmission line between each node.

In regard to claims 33 and 44, Kohno in view of Momona discloses the claim limitations as discussed above. Kohno further discloses a network status table that indicated results of the

determination of the state of the primary and redundant network connections between the

computer network interface and the interface of other network nodes (see figure 4).

In regard to claims 34 and 45, Kohno in view of Momona discloses the claim limitations

as discussed above. Kohno further discloses wherein the network status table comprises data

representing network status based on data received at a node from other network nodes (see

figure 4 and column 3 lines 40-47).

In regard to claims 35 and 46, Kohno in view of Momona discloses the claim limitations

as discussed above. Kohno further discloses wherein the data received at a node from other

network nodes comprises a diagnostic message (column 3 lines 3-12).

In regard to claims 36 and 47, Kohno in view of Momona discloses the claim limitations

as discussed above. Kohno further discloses wherein the data received at a node from other

network nodes comprises data representing the ability of the other nodes to receive data from

other different network nodes (see figure 4 and column 3 lines 43-47).

In regard to claims 37, 38, 48, and 49, Kohno in view of Momona discloses the claim

limitations as discussed above. Kohno further discloses wherein the network status table

comprises data representing network status based on a node's ability to send data to other nodes

(see figure 4 and column 3 lines 43-47).

In regard to claims 39 and 50, Kohno in view of Momona discloses the claim limitations

as discussed above. Kohno further discloses wherein selecting either the primary network

connection or redundant network connection for communication between each pair of network

nodes comprises selecting the primary network connection if the state of the primary network

connection is determined to be operable and selecting the redundant connection if the state of

the primary network connection is determined to be inoperable. Kohno states the use of a switch

means such that the receiving circuit is connected to a normal transmission line when

abnormality is decided (see column 3 lines 25-30), indicating a switch from the primary network

connection to a secondary network connection when the primary connection is inoperable or

abnormal.

In regard to claims 40 and 51, Kohno in view of Momona discloses the claim limitations

as discussed above. Kohno further discloses wherein selecting the primary or redundant network

connection for communication between each pair of network nodes comprises selecting the

primary network connection to transmit data if the state of the primary network connection is

determined to be operable to transmit data, selecting the primary network connection to receive

data if the state of the primary network connection is determined to be operable to receive data,

selecting the redundant network connection to transmit data if the state of the primary network

connection is determined to be inoperable to transmit data, and selecting the redundant network

connection to receive data if the state of the primary network connection is determined to be

inoperable to receive data. Kohno states the use of a switch means such that the receiving circuit

is connected to a normal transmission line when abnormality is decided (see column 3 lines 25-

30), indicating a switch from the primary network connection to a secondary network connection

when the primary connection is not operable or abnormal. Thus, it is implied that there is a

primary network connection to transmit and receive data upon determination that the network

connection is operable and a redundant network connection to transmit and receive data upon

determination the network connection is inoperable.

In regard to claim 41 and 52, Kohno in view of Momona discloses the claim limitations as discussed above. Monoma further discloses wherein selecting a connection for sending and receiving data between each pair of network nodes comprises selecting a connection for sending and receiving data from a first node to one or more connected intermediate nodes and selecting a connection for sending and receiving data from an intermediate node to a second node. Momona discloses the use of one or more intermediate nodes as a repeater (see figure 1 and column 4 lines 5-11).

In regards to claim 42, Kohno in view of Momona discloses the claim limitations as discussed above. Kohno further disclose determining the state of connections between each pair of network nodes comprises determination of whether each node in a pair of network nodes can send data to the other node and can receive data from the other node in the pair. Kohno states the use of an abnormal test circuit to check if the transmission line is normal or operable, thus determining whether each node in a pair can send and receive data to the other (see column 2 lines 58-69 and column 3 lines 1-4). Upon determination that the transmission line between a pair is abnormal or inoperable, it is understood that data cannot be sent and received between each node in the pair.

(10) Response to Argument

In response to applicant's argument that there is no suggestion to combine the references (see page 8 under section A, page 10 bottom paragraph, and page 11 middle paragraph), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching,

suggestion, or motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5

USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir.

1992).

In this case, Kohno discloses nodes communicating via redundant lines. Horn, likewise,

discloses communicating via redundant lines. Horn further discloses selectively transmits

information via a selected one of the connections (see column 3 lines 55-60). It would have been

obvious to make the modification to selectively transmit information via a selected one of the

connections. A person of ordinary skill in the art could have been motivated to make the

modification because Kohno is concerned with reliable communication of data between a pair of

nodes (see figure 1 and column 2 lines 37-41) and transmitting data via a selected one of the

network connections, as per teachings of Horn, constitute a well known means of transmission

that effectively and efficiently provide reliable redundant/backup network connection (see

column 3 lines 25-27).

Furthermore, Kohno discloses selecting connections from one node to another and the

use of repeaters (see figure 3 and column 3 lines 35-42) and Momona discloses using one or

more intermediate nodes as a repeater (see figure 1 and column 4 lines 5-11). By incorporating

one of the nodes as the repeater, as per teaching of Momona, the node would be able to

selectively forward data. It would have been obvious to one of ordinary skill in the art at the

time the invention was made to use one or more intermediate nodes as a repeater, indicating

wherein at least one of the at least three network nodes is operable to selectively forward data,

where the data is forwarded to a different one of the at least three network nodes. A person of

ordinary skill in the art could have been motivated to make the modification because Kohno

discloses the use of repeaters (see column 3 lines 35-42) and having intermediate nodes that act

as repeaters, as per teachings of Momona (see column 4 lines 5-11), would lessen distortion and

minimize or remove the need to have repeaters per transmission line between each node.

Examiner further notes the appellant has previously argued against the combination of

Kohno and Momona in a previous appeal, which the examiner was affirmed. In the previous

appeal, examiner rejected claim 10,41, and 52 using the combination of Kohno and Momona. In

the BPAI decision, the board said there is nothing unobvious about selecting connections

between a first node and intermediate nodes along the way to a second node. The board further

stated "Moreover, the examiner has offered evidence, via Momona, of the notoriety of providing

for intermediate nodes between a pair of nodes and the skilled artisan would clearly have found it

obvious to provide for such intermediate nodes in Kohno. Since Kohno provides for selection of

a connection between a pair of nodes, it clearly would have been obvious to provide for the

selection of a connection between any two nodes, including selecting a connection between a

first node and an intermediate node, as well as selecting between an intermediate node and a

second node" (see page 7-8 of BPAI Decision filed 1/14/05). It is understood that transmitting

data to an intermediary node prior to transmitting the data to the second node constitutes

"selectively forward data, where the data is forwarded to a different one of the at least three

networked nodes that the node from which the data is received" as cited in claim 1. As such, if it

is obvious to select a connection between a first node and an intermediate node, as well as select

between an intermediate node and a second node, then it should be obvious to "selectively

forward data, where the data is forwarded to a different one of the at least three networked nodes

that the node from which the data is received". Argument is moot. Examiner maintains his

rejection.

In response to appellant's arguments pertaining to claim 1-10 and 31 that the cited

references in combination fails to disclose "selecting either the primary network connection, but

not both, for sending and receiving data between each pair of network nodes, ... independently

selecting the path to be used to be used to communicate between each pair based on the

determined network states for each pair of the at least three networked nodes, as is recited in the

pending claims ... selectively forwarding data in the at least one of the at least three network

nodes, where data is forwarded to a different one of the at least three network nodes, where data

is forwarded to a different one of the at least three network nodes than the nodes from which the

data is received"(see bottom page 8 and top page 11) examiner respectfully disagrees.

Kohno discloses a plurality of network nodes connected to each other (see figure 3).

Kohno further discloses for each pair of network nodes, receiving data via one of selected

transmission lines by the receiving circuit (see figure 2 and column 3 lines 24-26), thus

indicating selecting either the primary network connection or the redundant network connection,

but not both, for receiving data between each pair of network nodes. It is further understood the

network path for communication between one pair of nodes is selected independent from the

network path for another pair of nodes. This is further shown in figure 4 of Kohno. Since there is

a fault in the communication between nodes S1 and S4, the pair would have to select

transmission line B as the network path. Since there is no fault between nodes S1 and S2, the pair

could select transmission line A or B, as the network path. As such, Kohno discloses the network

path selected to be used to communicate between each pair is selected independently based on the determined network states for each pair of the at least three network nodes.

However, as pointed out in the rejection above, Kohno discloses a communication network which send signals via both transmission lines (see column 3 lines 20-30) and thus fails to disclose selecting either the primary network connection or the redundant network connection, but not both, for sending data between each pair of network nodes.

Examiner further explained in the rejection that Horn discloses a communication network system which monitors the network connections and determines the availability of each connection, and then selectively transmits information via a selected one of the connections (see column 3 lines 55-60). As the information is transmitted via a selected one of the connections, Horn clearly discloses selecting either the primary network connection or the redundant network connection, but not both, for sending and receiving data between each pair of network nodes. As such, the combination discloses "selecting either the primary network connection, but not both, for sending and receiving data between each pair of network nodes, such that the network path selected to be used to communicate between each pair is selected independently based on the determined network states for each pair of the at least three network nodes".

It was also noted that Kohno further fails to explicitly disclose wherein at least one of the at least three network nodes is operable to selectively forward data, where the data is forwarded to a different one of the at least three network nodes.

However, Momona discloses using one or more intermediate nodes as a repeater (see figure 1 and column 4 lines 5-11), indicating wherein at least one of the at least three network nodes is operable to selectively forward data, where the data is forwarded to a different one of

the at least three network nodes. By incorporating one of the nodes as the repeater, as per

teaching of Momona, the node would be able to selectively forward data. As such, the

combination discloses "wherein at least one of the at least three network nodes is operable to

selectively forward data, where the data is forwarded to a different one of the at least three

network nodes." Arguments are moot. Examiner maintains his rejection

In response to appellant's arguments pertaining to claim 32-52 (see page 11), examiner

notes the claim limitations for independent claims 32 and 43 are different than that of

independent claim 1. More specifically, claim 32 and 43 discloses among other things "selecting

either the primary network connection or the redundant network connection, but not both, **for**

communication with each pair of at least two other network nodes". This is different from

independent claim 1 because claim 1 discloses among other things "selecting either the primary

network connection or the redundant network connection, but not both, **for sending and**

receiving data between each pair of at least two other network nodes". Although the Kohno

reference alone does not teach "sending" a signal over only one line at a time, Kohno discloses

receiving signals by the receiving circuit from only one transmission line (column 3 lines 5-7 and

20-30). It is understood in order for a first node to communicate with a second node, the data

must be received by the second node. As Kohno receives data from only one of the transmission

lines, Kohno communicates via only one transmission line, thus indicating, "selecting either the

primary network connection or the redundant network connection, but not both, for

communication with each pair of at least two other network nodes."

The remaining arguments pertaining to claims 32-52 are similar to the arguments

presented above, and as such, are rejected for similar reasons. Arguments are moot. Examiner

maintains his rejection

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related

Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Conferees:

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